

Conference Abstract

Mobile Applications to Conservation Applications: Incentivizing FAIR Principles of Data Management by Providing Users with Flexible Mobile Data Collection Tools

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Abstract

Robust, accessible data are critical for the conservation of biodiversity. Biodiversity monitoring data is collected by numerous professional and volunteer projects all over the world, but finding and accessing these disparate datasets for use in research and conservation is problematic. Integrating individual datasets into a metadatabase that abides the [FAIR](#) principles by being Findable, Accessible, Interoperable, and Reusable may be the best way to maximize the usefulness of these abundant data, but barriers such as cost and a lack of access to necessary tools may prohibit this. [Birds Canada](#) seeks to resolve this long-standing issue with the [NatureCounts mobile app](#).

The app's extremely flexible and customizable data architecture accommodates a wide variety of data collection methodologies. Users define protocols tailored to their monitoring project, then the app dynamically renders user-friendly and intuitive data entry forms specific to each of the project's protocols. In this way, it can provide mobile data entry support to almost any standardized avian survey with just a few hours of setup. The app includes many innovative tools, such as a first-of-its-kind point-count feature that

uses satellite imagery to improve and digitize one of the most important methodologies for biodiversity monitoring.

Data collected through the app flow into the FAIR-abiding [NatureCounts](#) database, which—at 360 million records—is the largest biodiversity database in Canada. Data in NatureCounts can be made available via browser-based tools, an R package, and several data products. NatureCounts supports over 9000 data requests annually from the conservation community. Data from NatureCounts have been used for species assessments, land use planning, impact assessment, climate change mitigation, and over 4200 scientific publications to date. Flexible data access permissions support the security of sensitive records and Indigenous data sovereignty.

Where data permissions allow, datasets collected through the app can also be integrated into the Global Biodiversity Information Facility ([GBIF](#)).

By improving accuracy in several key areas and removing the tedious step of data transcription, the app offers immense time and cost savings and reduces errors. Its user-friendly interface (Fig. 1) walks observers through protocols, ensuring consistency and increasing accessibility for staff and volunteers of varying skill levels. These benefits incentivise programs to adopt the platform. In doing so, their data are integrated into a FAIR repository at the outset, eliminating the need for re-formatting and integration, steps which are often overlooked or unfunded.

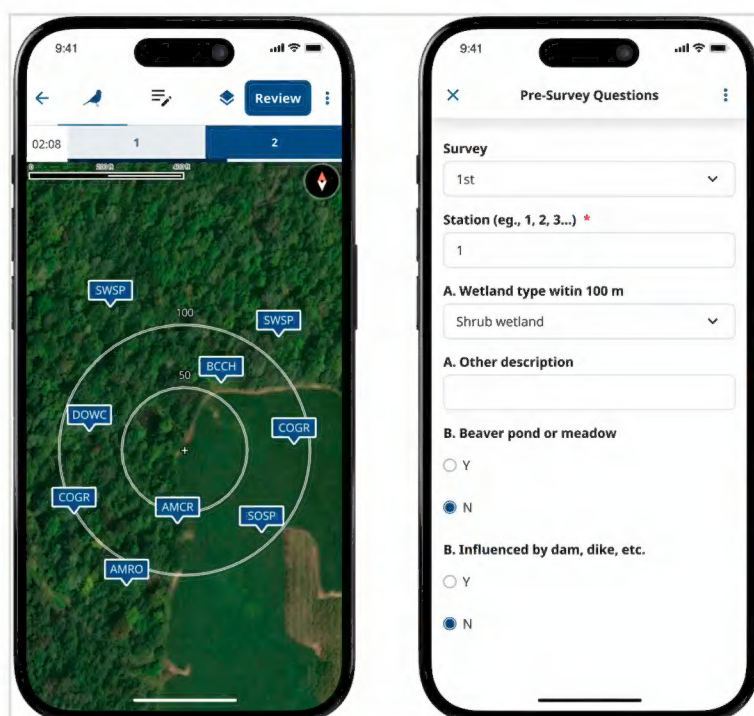


Figure 1.

Screenshots of the NatureCounts app data entry interface, showing the collection of point count data (left) and customizable covariates (right). By Birds Canada, [CC BY-ND-NC 4.0](#)

By providing software tools across the data pipeline, from collection through application, the NatureCounts platform seeks to support projects in collecting robust data and meeting the FAIR principles of data management. This support allows projects of all sizes and capacities to make a positive contribution to the data landscape and to achieve the

targets of the The Kunming-Montreal Global Biodiversity Framework (Convention on Biological Diversity 2022).

Keywords

technology, open data, data sharing, NatureCounts, citizen science

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Conflicts of interest

The authors have declared that no competing interests exist.

References

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